

Docket No.: F2108.0041  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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In re Patent Application of:  
Shigeru Nakamura

Application No.: 10/568,984

Confirmation No.: 8872

Filed: August 2, 2006

Art Unit: 2874

For: ALL-OPTICAL SWITCH

Examiner: H. Q. Tran

**RESPONSE TO NON-FINAL OFFICE ACTION**

MS Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

**INTRODUCTORY COMMENTS**

In response to the Office Action dated April 28, 2008, please amend the above-identified U.S. patent application as follows:

**Amendments to the Claims** begin on page 3 of this paper.

**Remarks/Arguments** begin on page 5 of this paper.

## FEE CALCULATION

Any additional fee required has been calculated as follows:

	Claims Remaining After Amendment	Highest Number Previously Paid	Number Extra Claims Present	Rate	Additional Fee
Total	5	20* =	0	x \$50.00	\$0.00
Independent	1	3** =	0	x \$210.00	0.00
First presentation of Multiple Dependent Claim(s) (if applicable)					0.00
TOTAL					\$0.00

\*not less than 20

\*\* not less than 3

No additional fee is required.

In the event a fee is required or if any additional fee during the prosecution of this application is not paid, the Patent Office is authorized to charge the underpayment to Deposit Account No. 50-2215.

## CONTINGENT EXTENSION REQUEST

If this communication is filed after the shortened statutory time period had elapsed and no separate Petition is enclosed, the Commissioner of Patents and Trademarks is petitioned, under 37 CFR 1.136(a), to extend the time for filing a response to the outstanding Office Action by the number of months which will avoid abandonment under 37 CFR 1.135. The fee under 37 CFR 1.17 should be charged to our Deposit Account No. 50-2215.

### AMENDMENTS TO THE CLAIMS

1. (Currently amended) An all-optical switch characterized in comprising:
  - a first input port to which a non-return-to-zero light signal is inputted;
  - a second input port to which a carrier light is inputted;
  - first and second light paths;
  - a division unit for dividing ~~the~~ light inputted to said first and second input ports into said first and second light paths;
  - a first nonlinear optical element provided to said first light path, into which ~~one of the~~ a first light signal ~~signals~~ among the light signals divided by said division unit and one of the carrier lights among the carrier lights divided by said division unit are inputted, for causing ~~a the~~ refractive index to change in nonlinear fashion according to said first ~~one~~-light signal, and shifting the phase of said one carrier light in a nonlinear fashion;
  - a second nonlinear optical element provided to said second light path, into which a second ~~the other~~-light signal among the light signals divided by said division unit and an the other carrier light among the carrier lights divided by said division unit are inputted, for causing a the-refractive index to change in nonlinear fashion according to said second other-light signal, and shifting the phase of said other carrier light in a nonlinear fashion;
  - an attenuation unit for attenuating said second other-light signal inputted to said second nonlinear optical element below said first ~~one~~-light signal inputted to said first nonlinear optical element;
  - a delay unit for causing said second other-light signal to be inputted to said second nonlinear optical element after said first ~~one~~-light signal is inputted to said first nonlinear optical element; and
  - a synthesizer for synthesizing ~~the~~ light that has passed through said first and second light paths; wherein
    - wherein ~~a the~~-time by which the inputting of said second other-light signal is delayed by said delay unit is shorter than a the-relaxation time of the nonlinear refractive index change in said first and second nonlinear optical elements.

2. (Original) The all-optical switch according to claim 1, characterized in that said first and second input ports are arranged so that the propagation direction of said light signal is in the opposite direction from the propagation direction of said carrier light.

3. (Previously presented) The all-optical switch according to claim 1, characterized in that said carrier light is unmodulated, continuous light.

4. (Currently amended) The all-optical switch according to claim 1, characterized in that said carrier light is a clock light pulse that is synchronized with said non-return-to-zero light signal.

5. (Previously presented) The all-optical switch according to claim 1, characterized in that said delay unit is formed by making the length of the light path from said division unit to said second nonlinear optical element in said second light path longer than the length of the light path from said division unit to said first nonlinear optical element in said first light path.